BELING CONSULTANTS

Professional Engineering and Environmental Services

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Department of the Navy
Engineering Field Activities
Midwest Code O23B
Naval Facilities Engineering Command, Bldg. 1-A
2703 Sheridan Road, Suite #120
Great Lakes, Illinois 60088-5600

Attn: Tony Andrews, Project Engineer and Technical Specialist

SUBJECT: LETTER REPORT
LABORATORY ANALYTICAL RESULTS
OF LIMITED FIELD SAMPLING
WASTE CHARACTERIZATION PRIOR TO
REMOVAL OF FUEL AND WATER DISTRIBUTION PIPING
FFTU FACILITY CONTRACT #N68950-95-D-9021

Dear Mr. Andrews:

As authorized, a limited number of field samples were collected and analyzed for trace amount of compounds including volatiles, semi-volatiles, metals, pesticides, herbicides, and PCBs. Some sample jars collected on August 2, 1996 broke in shipment to Hazelton Laboratory Services, a CLP laboratory, and additional samples were collected and sent to the laboratory on August 9, 1996. Preliminary results of analytical testing were compiled and provided to you on August 27, 1996. Hazelton Laboratory has furnished a hard copy of completed laboratory reports for the samples submitted to them in August. This letter report provides results of Beling Consultants' (Beling's) evaluation of those report forms in tabular format. The attached tables provide the sample locations across the top from left to right. The compounds which were detected above the instrument detection level for the method used are provided in the furthest left-hand column.

Some samples were analyzed as solids and some samples were analyzed as liquid, therefore the results are separated as either parts per billion, or micrograms per liter (equivalent).

Compounds which were targeted but not detected ("U"), were not provided in the table. The table does include all data qualifiers provided in laboratory reports such as "B" and

"J". For inorganic parameters, the "B" denotes that a reported value was obtained from a reading that was less than the contract required detection limit, but greater than or equal to the instrument detection limit; for organic parameters, "B" has been included on the tables and means that the analyte is found in the associated blank as well as in the sample. The concentrations of constituents detected in the blank are not provided in the table, however, all of the laboratory QA/QC data is attached as Appendix A for reference. Note that the other data qualifiers, such as those denoting inconsistencies with QA/QC review, were not noted as a problem.

Sample locations were previously identified in a work plan which was reviewed and approved by the Engineer in Charge and the State and Federal Regulatory Agencies. A brief summary of sample locations is provided below.

Sample #1 Sludge collected from a concrete vault downstream of the oil/water separator. The sample collection point is associated with discharge piping to the former settlement ponds.

Sample #2 A water sample collected from the east side of the oil/water separator pit which had approximately eight feet of standing water in a twelve foot concrete vault. The oil/water separator pits are somewhat sheltered from precipitation, therefore the water is believed to be sourced from a network of underground cast iron drainage lines.

Sample #3 Water collected from the west side of the oil/water separator pit. This sample location is believed to be in hydraulic connection with sample location #2 above.

Samples #4 and #5 Sample #4 was omitted due to reports from the environmental department, which indicated the underground storage tank (UST) to be sampled for sample #4 had been removed in 1988. Sample #5 is comprised mostly of free product believed to be diesel. The tank is located near the entrance on the west-southwest portion of the property. Field observations indicated that water was present inside the tank below the free product.

Samples #6 and #7 The USTs believed to be located in the central but eastern portion of the site were targeted to provide samples of product. A limited geophysical

survey using a magnetometer, Model EM-31, appeared to indicate an anomaly in the area of the tanks. Fill pipes were not observed from the surface because plan drawings indicate remote fill lines and an extensive array of field distribution piping. A backhoe was used to perform limited shallow excavation in an attempt to open the tops of the tanks to facilitate field sampling. The backhoe encountered pipes, but no tanks. Groundwater was encountered between 2½ and 3 feet below grade. A sample of the standing water with apparent hydrocarbon contamination was collected and designated as UST excavation water, sample #7.

Sample #8 Dirt collected from a christmas tree square, former surface impoundment, located closest to the FFTU classroom training facility. Dirt was collected from the drain within this square impoundment area.

Sample #9 Water collected from the circular burn pan, or burn pit closest to the FFTU classroom facility. Water which appeared to be heavy with biomass and vegetative matter was collected, and subsequently extracted by the laboratory into a solid substance. The results are, therefore, reported as a solid. The substantial accumulation of water within this burn pan indicates that the drainage line is plugged, or that the valve to the drain is closed.

Sample #10 Dirt collected from the floor drain within the carrier compartment closest to the FFTU classroom building. A eight-inch diameter floor drain grate was removed to facilitate sample collection.

Sample #11 Wipe samples from floor of the carrier compartment building closest to the FFTU classroom building. A template of 100 square centimeters and a wipe cloth dampened with hexane were utilized to obtain the wipe sample. The cloth was vigorously rubbed from side to side and up and down within the 100 square centimeter template area. The wipe sample was analyzed for semi-volatiles and PCBs only, rather than the full suite of chemical analyses used for the other samples.

Sample #12 Wipe sample from the south wall of the carrier compartment building located closest to the FFTU classroom building. This wipe samples was obtained in the same way and analyzed for the same parameters as described for sample #11 above.

Sample #13 A sludge sample intended to serve as a duplicate of sample #1, both of which were collected downstream of the oil/water separator in a concrete vault. The results for sample #13 are provided next to the results of sample #1 in the attached tables.

Table #1 provides the analytical results for parameters including metals, organic pesticides/PCBs and herbicides. The results for metals are separated into two separate sections, one for solids or soils, and one for water or groundwater. As previously stated, all results are provided in parts per billion (ppb) equivalent. Analities not detected are not provided in the tables.

Don Harrison of the Illinois Environmental Protection Agency (IEPA) and Laura Ripley of United States Environmental Protection Agency (USEPA) have both indicated that the presence of metals in soil and groundwater has been anticipated and is not a regulatory concern at this time.

PCBs were not detected in any of the samples. Lindane was detected in the oil/water separator. It is believed to be associated with the Navy's louse insecticide powder NSN 6840-00-242-4271. Three pages copied from the Manual of Naval Preventative Medicine are provided with this report as Appendix B.

Pesticides such as 4,4-DDD, Beta-BHC, and 4,4-DDE were detected in the drain samples. Heptachlor, Dieldrin, and Gamma Chlordane were detected in the sludge along with other insecticides mentioned above. Aldrin and Beta-BHC were detected in the diesel sample.

Herbicides such as 2,4-D, Silvex, and 2,4-DB were detected in the sludge and carrier drain dirt.

The source of some of the pesticides and herbicides may be related to the maintenance of the golf course which surrounds the FFTU facility.

Table #2 provides the analytical results of volatile organic compounds for the locations tested. Again, the results separated solids/soils from water/groundwater. The results of some volatiles indicate a "B" and/or "J" which implies a decreased confidence level or a decreased level of concern related to the presence of those compounds. Those compounds detected and provided in Table #2 are discussed below.

Methylene Chloride: a common laboratory contaminant. Not of specific regulatory concern regarding the removal of the fuel lines or remediation of the other specific locations sampled.

Xylene, toluene, naphthalene: common components of fuel.

1,2,4-trichlorobenzene: potential uses or sources: lubricant, insecticides per Hawley's Condensed Chemical Dictionary, eleventh edition.

1,2-dibromo-3-chloropropane: an additive to pesticides, presumably a dispersant. Source of information, closure documentation prepared for Fort Sheridan.

Benzene, ethylbenzene, isopropybenzene, and N-propybenzene: common components of fuel.

1,2,4 trimethlylbenzene: a component of lubricants and also known to be a fuel component. Source Dictionary of Chemical Names & Synonyms, Lewis Publishers.

1,3,5 trimethylbenzene: insoluble in water, derivative of coal tar per Hawley's.

Tricloroflоromethane: an agent used in fire extinguishers per Hawley's.

Other compounds not otherwise noted are not of apparent regulatory concern at this time. Donald Harrison of IEPA has expressed an interest in identifying the source or potential sources for the compounds detected above.

Table 3 provides the results of analysis for semi-volatile organic compounds from solids or soil samples. Many of the chemicals listed on this table are within the polynuclear aromatic hydrocarbon chemical class. PNAs are often a byproduct of combustion of organic matter and their presence at this site is attributable to the burning of fuel. Benzo(a)pyrene is the only carcinogenic PNA to be detected during this analytical study. It was noted in the drain samples from christmas tree square and the carrier compartment, in the material extracted from water in the burn pit, and in a wipe sample from the carrier compartment wall.

Dibenzofuran was detected in the sludge samples, and the drains of the christmas tree square and the carrier compartment. The source of dibenzofuran is believed to be insecticides, source: Hawley's.

Table #4 provides the analytical results of semi-volatile organic compounds in water/ groundwater samples. Non-carcinogenic PNAs were detected in the oil/water separator, the diesel product, and the groundwater collected near the location of former fuel tanks.

I trust that the information provided by the field sampling and this analytical summary are useful in the determination of additional field screening and cleanup objectives for the FFTU site.

Sincerely,

BELING CONSULTANTS, INC.

Molly E. Arp, Geologist, CHMM
Manager - Environmental Compliance

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cc: Laura Ripley, USEPA w/attachments
Don Harison, IEPA w/attachments
Beling's FFTU Project Team w/o attachments
File #29648